

**What Is Claimed Is:**

1        1.    A method for constructing a superconducting cable  
2        comprising N phases, the method comprising the steps of  
3                -        providing each phase in the cable in the form  
4        of a number of phase conductors,  
5                -        classifying the phase-conductors in N-phase  
6        groups, each N-phase group comprising a phase conductor  
7        from each of N different phases, where N is greater than  
8        one;  
9                -        arranging insulation means in the cable around  
10       each phase conductor or between assemblies of phase  
11       conductors,  
12               -        providing the N-phase groups or assemblies of  
13       N-phase groups with a common electrically conductive  
14       screen.

1        2.    A method according to claim 1, wherein the  
2        individual phases only contain superconducting cable wire  
3        and an insulation system.

1        3.    A method according to claim 1 or 2, wherein the N-  
2        phase groups are arranged in a number of coaxial groups,  
3        either with several different phase conductors  
4        corresponding to different phases in each coaxial layer  
5        or with each individual phase conductor of a particular  
6        phase in a separate coaxial layer.

1        4.    A method according to claim 1 or 2, wherein the N-  
2        phase groups or each of the assemblies of N-phase groups  
3        are arranged so that the phase conductors form N flat  
4        phases.

1     5.    A method according to claim 1 or 2, wherein each of  
2     the phases is constructed by one or several individual  
3     conductors such as tapes.

1     6.    A method according to claim 1, wherein all N-phase  
2     groups are gathered in one assembly which is surrounded  
3     by one common electrical screen.

1     7.    A method according to claim 6, wherein the N phases  
2     are arranged concentrically with concentric insulation  
3     between each of the N phases.

1     8.    A method according to claim 1, wherein the phases in  
2     each N-phase group or assembly of N-phase groups are  
3     separately and electrically isolated from each other.

1     9.    A method according to claim 1, wherein the phases in  
2     each N-phase group or assembly of N-phase groups are  
3     isolated from each other by a common insulator.

1     10.   A method according to claim 1, wherein the number of  
2     N-phase groups is larger than 10.

1     11.   A method according to claim 1, wherein the  
2     electrical screen is kept at 0 potential and consists  
3     fully or partially of superconducting, metallic, and  
4     semiconducting materials or of a combination of these  
5     materials with non-conducting materials and composites  
6     and is positioned close to the electrically insulating  
7     material.

1     **12.** A method according to claim 1, wherein the  
2     individual phases in each N-phase group or assembly of N-  
3     phase groups have such permittivity that they co-operate  
4     magnetically.

1     **13.** A method according to claim 1, wherein at least one  
2     of the phases is constituted by a neutral conductor.

1     **14.** A superconducting cable consisting of N phases,  
2     wherein each phase in the cable comprises a number of  
3     phase conductors, the phase-conductors having been  
4     classified into N-phase groups, each N-phase group  
5     comprising a phase conductor from each of the N different  
6     phases, where N is greater than one, and wherein  
7     insulation means have been arranged in the cable around  
8     each phase conductor or between assemblies of phase  
9     conductors, and the N-phase groups or assemblies of N-  
10    phase groups has/have been provided with a common  
11    electrical screen.

1     **15.** A method according to claim 1, wherein the number of  
2     N-phase groups is larger than 100.